TANDBERG

TR 2025

Service Manual

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CLEANING THE SWITCHES

Occasionaly the push button switches will need to be cleaned and lubricated to maintain trouble free action. Apply a good cleaning agent sparingly with a fine brush. We recommend "Tandberg Klüberfett" or "Wahlerfett" obtainable from our Service Department.

Alcohol or methylated spirit may also be used for cleaning and vaseline may be used for lubrication afterwards.

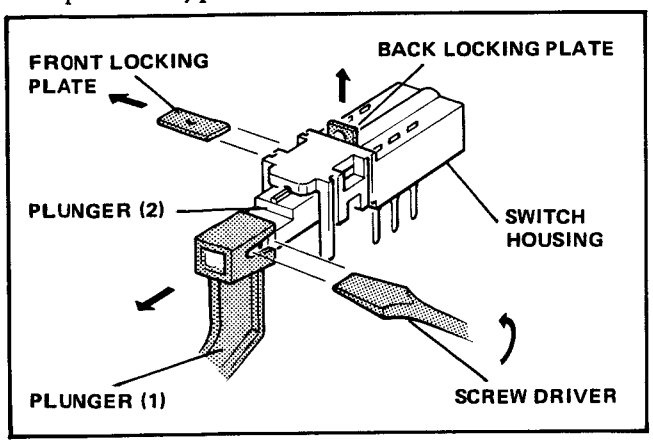
Avoid using cleaning agents that could attack the metal parts.

NOTE! Avoid touching the contacts with your fingers, it could cause corrosion.

NOTE! We have developed our own cleaning/lubricating agent "Tandberg Contact Spray" in aerosols, and we recommend it for all types of contacts. These aerosols can be supplied from our district offices and subsidiary companies.

DISMANTLING THE SWITCHES

Independent type



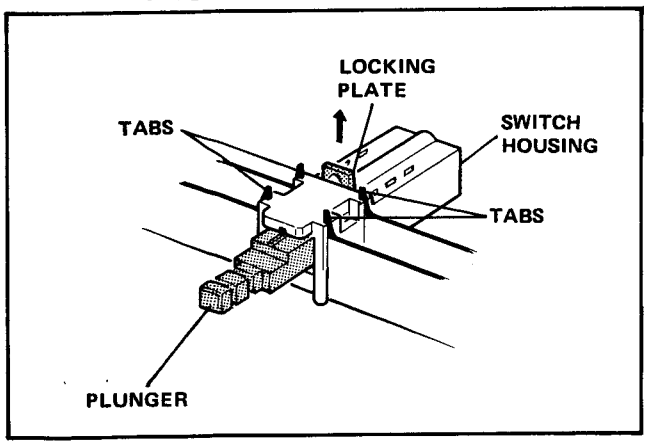
Plunger:

- Set the plunger (1 and 2) to the forward (out) position.
- Pull plunger (1) off with the aid of a screwdriver.
- Press plunger (2) right in, at the same time pull plunger (1) forward and down into the slot in the board.
- Press plunger (2) slightly in (from the inner position), and at the same time press the front locking plate out to the left.

  NOTE! When re-assembling, the tabs on the locking plate must point down.
- Lift the back locking plate up.
- Pull the plunger out.

  NOTE! The spring for the return of plunger (2) is located on the back end of the plunger and is loose.

Interlocking type



Plunger:

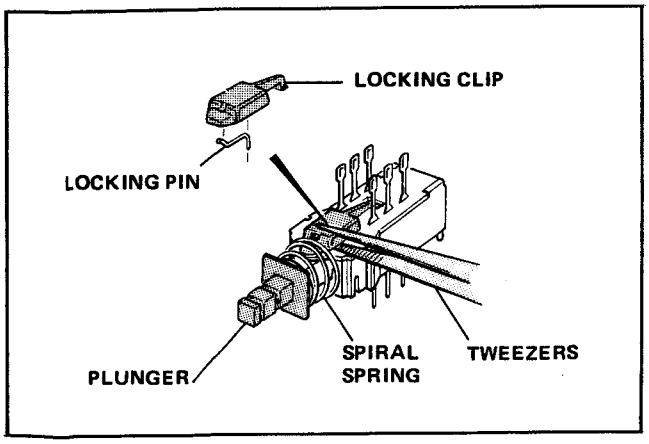
- Set the plunger to the forward (out) position.
- Pull the locking plate up.
- Pull the plunger out.

  NOTE! The spring for the return of the plunger is located on the back end of the plunger and is loose.

Switch housing:

- When the switch housing is dismantled, it pays to first unsolder the pre-set pot. located under that particular switch housing. The pre-set pot. is soldered at two points on the back edge on the component side.
- Push the pre-set pot. aside to gain access to the solder contacts on the switch housing.
- Unsolder the switch housing.
- Straighten up the four tabs which hold the switch housing.
- Lift up the switch housing.

Independent



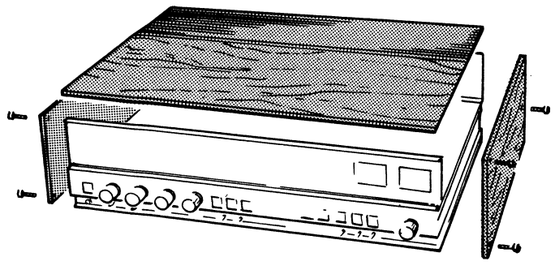
Plunger:

- Pull the spiral spring slightly forwards so that the locking clip is free at its front edge.
  Use tweezers as shown in the figure.
- Press the plunger right in and hold it there while you push the locking clip back and lift it up.

  NOTE! Take care of the loose locking pin.
- Pull out the plunger.

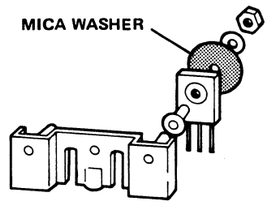
  NOTE! The contact springs are loose. The spiral springs are slightly conical, so if the are taken off the plunger you must take care that the narrowest end is towards the front of the plunger when it is re-assembled.

MECHANICAL DISMANTLING



CABINET

- Remove the 3 screws from each side panel.
- Lift up the top panel by the front edge and pull forwards.

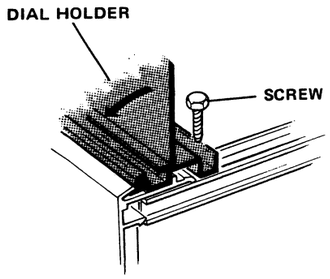


OUTPUT TRANSISTORS

- When you change the output transistors we recommend that you smear "**Thermal Compound Wakefield**" on both sides of the mica washer. See the figure.

This grease can be ordered from our Service Dept.
Order number 340245.

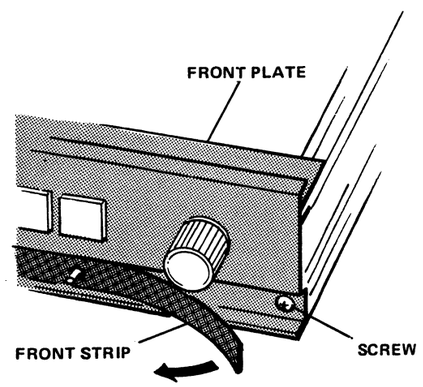
We do **not** recommend silicone grease which can easily attack solder joints.



DIAL HOLDER

- Remove the connections from the meters and the FM stereo lamp.
- Remove one screw from each end of the dial holder. Take care with the pointer.
- Tilt the dial holder forward by the top edge and pull up.

NOTE! The dial and the meters can be removed separately without loosening the dial holder.



FRONT PLATE

- Pull off the knobs for VOLUME, BALANCE, BASS, TREBLE and the tuner knob.
- Loosen the black front strip by the filter pre-set knobs by pulling in forwards from the end. See figure.

NOTE! When re-assembling the strip, press it hard in from the front.

- Remove one screw from each end of the front plate.
- Remove the front plate.

CORD DRIVE

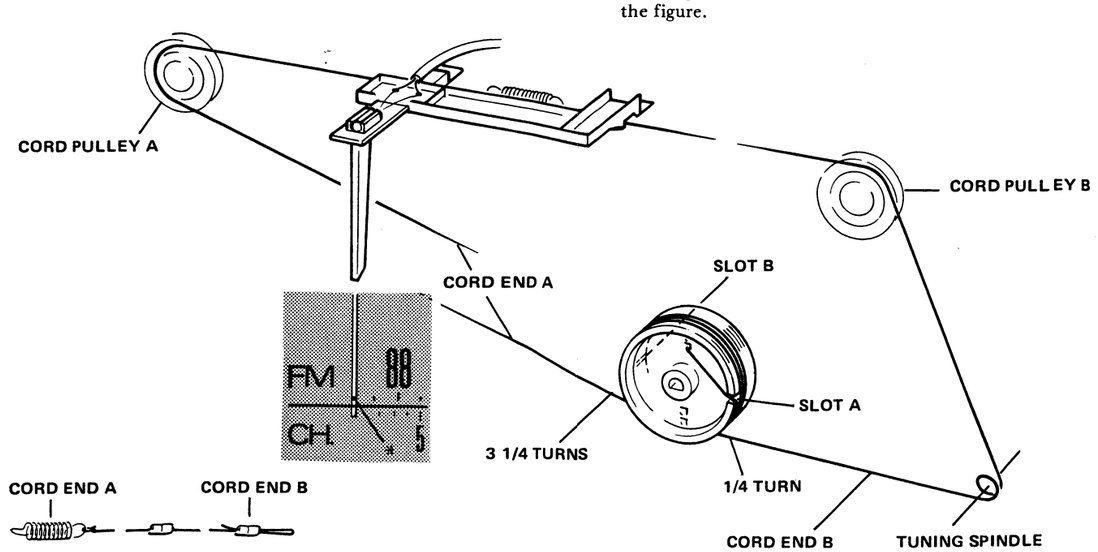
- Turn the cord drive wheel to the maximum anti-clockwise position (left).
- Remove the cord drive wheel.
- Remove the defective cord.
- Fit the cord drive wheel with the new cord back into place.
- Fit cord end B into slot B.
- Lay the cord into the back groove of the cord drive wheel with a ¼ turn anit-clockwise.
- Lay one turn of the cord round the tuning spindle and up over cord pulley B.
- Fix the cord with tape.
- Lay cord end A along groove A.
- Lay the cord in the front groove of the cord drive wheel with 3¼ turns clockwise.
- Lay the cord over cord pulley A and fix it to cord end B.

Assemble the dial pointer.

- Assemble the dial holder and set the pointer to the lowest mark on the dial as described below.

Setting the pointer

- Turn the cord drive wheel to its extreme anti-clockwise position.
- Set the pointer over the mark on the dial as shown in the figure.



FM– ALIGNMENT PROCEDURE

Steps	Receiver Frequency	GENERATOR Frequency	GENERATOR Deviation	GENERATOR Applied to M	Oscilloscope Connected to (M)	Circuit Adjust	Circuit Board No.	Notes
1 25 V for varicap						R902	Board No. A6	Connect a d.c. meter to M901 (page 10). Adjust R902 to get 25 V (± 0.2 V).
2 FM-IF	90MHz	90MHz	± 200kHz	M1 FM ant. input	M201 via diodeprobe Fig. 1 (A-2 board)	L106,107	A1	Muting button out. Adjust L106, L107 for max. curve height and symmetry (Figure 2) FM-IF 10.6 MHz to 10.8 MHz. The center frequency is determined by the fixed ceramic filter.
3 FM- osc.	90MHz 105MHz	90MHz 105MHz				R242 C118	A2 A1	Check the lowest setting of the dial pointer before trimming (Figure 3). Check 95 MHz and 100 MHz.
4A FM- Preset (P1)	See notes	87,5MHz	± 75kHz			R252	A2	Turn pre-set pot. to min. (anti-clockwise). Adjust R252 until the curve is in the center of the 'scope.
4B FM- Preset (P2)	103MHz	103MHz				R246		Turn pre-set pot. clockwise until the curve is in the center of the 'scope. Adjust R246 until the needle on the meter reaches 103 MHz. Check 87.5 MHz (P1).
5 RF circuits	90MHz 105MHz	90MHz 105MHz	± 200kHz			L101,102,103 C103,107,110	A1	Press in the FM button. Adjust for max. curve height and symmetry (Figure 2). **NOTE**! Adjust L101 to the outer position and L102, L103 to the inner position.
6A Detector	90MHz	90MHz	± 75kHz			L201	A2	AFC (muting button) out. Connect dist./voltmeter to TAPE OUT (pin 1). Adjust L201 for max. output voltage and min. distortion.
6B AFC muting button								AFC (muting button) in. Adjust L201 for symmetry on the IF curve. Check that the curve does not change when the AFC (muting button) is pressed in and out.
7 Tuning meter						R236		Adjust R236 until the needle comes to the center.
8 Muting						R214		Adjust R214 for threshold at 3 µV.
9 Signal- meter				M1 1mV/75 Ω		R209		Adjust for 90% of max. deflection.

NOTE!
The tuner does not stop physically when it reaches its extreme positions. Instead you will hear a mechanical click when it reaches either end of the tuning scale.

NOTE!
If you change one or more of the ceramic filters in the FM-IF, the replacement filters must have the same colour code.

Reason: The IF might be any frequency between 10.6 MHz and 10.8 MHz.

If you change the FM-IF coils, ceramic filters, or components where alignment is necessary, the decoder must also be aligned again.

Reason: Necessary for channel separation.

DECODER ALIGNMENT PROCEDURE

FM STEREO-GENERATOR

Steps	Receiver Frequency	GENERATOR Frequency	GENERATOR Deviation	GENERATOR Applied to M	Oscilloscope Connected to (M)	Circuit Adjust	Circuit Board No.	Notes
10 19 kHz osc.	90MHz	90MHz	1 mV/ 75 Ω Unmodulated mono	M1 10 mV/ 75Ω	M801	R801	A2	Adjust R801 to obtain 19 kHz on a frequency counter connected to M801.
11 Channel separation			Modulated with 10% pilot signal		M501 left channel	R802		Modulate the right channel 90% at 1 kHz. Connect the 'scope to TAPE OUT left channel. Adjust R802 to obtain min. curve height on the 'scope. Check by crossing over the channels (modulate the left channel and connect the 'scope to the right channel). Right and left channel should have the same curve height.
12 Signal level for mono/stereo switch-over				M1 7.5 µV/ 75Ω	M501	R215		Turn R215 to its clockwise end position and then turn it slowly anti-clockwise until the stereo lamp comes on.

ALTERNATIVE ALIGNMENT PROCEDURE

Without a frequency counter: Apply 1 mV to M1 from an FM sig. generator, modulated with a 10% pilot signal. Adjust R801 slowly alternately from each extreme setting (end) of the pot. until the stereo lamp comes on. Finally, set the pot. midway between the positions where the lamp comes on and goes off.

Without a stereo generator: Adjust R802 to min. signal from the set's speakers, right (or left) channel during a test transmission from an FM stereo transmitter when this is modulated only by the pilot signal and the signal is in the left (or right) channel.

Without a stereo generator: Apply 7.5 µV to M1 (75 ohms) from an FM generator modulated with 19 kHz (check it with a frequency counter) deviation 7.5 kHz. Follow the same alignment procedure as with an FM stereo generator.

Fig. 1 Diodeprobe

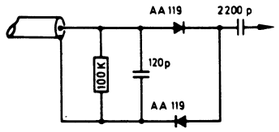


Fig. 2 Selectivity FM

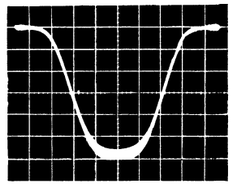
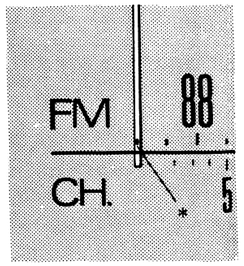
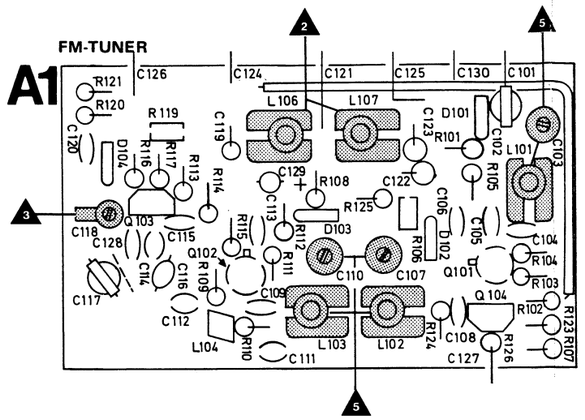


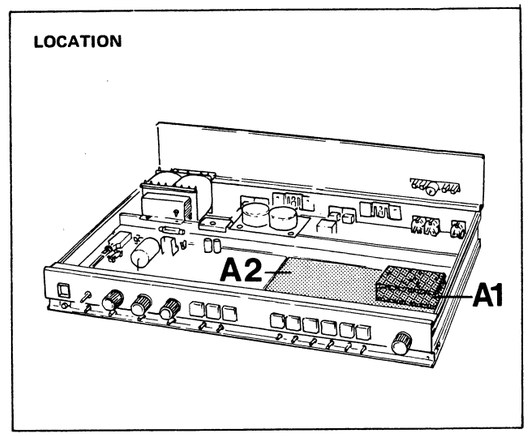
Fig. 3 Setting the pointer

Turn the cord drive wheel to its extreme anti-clockwise position.

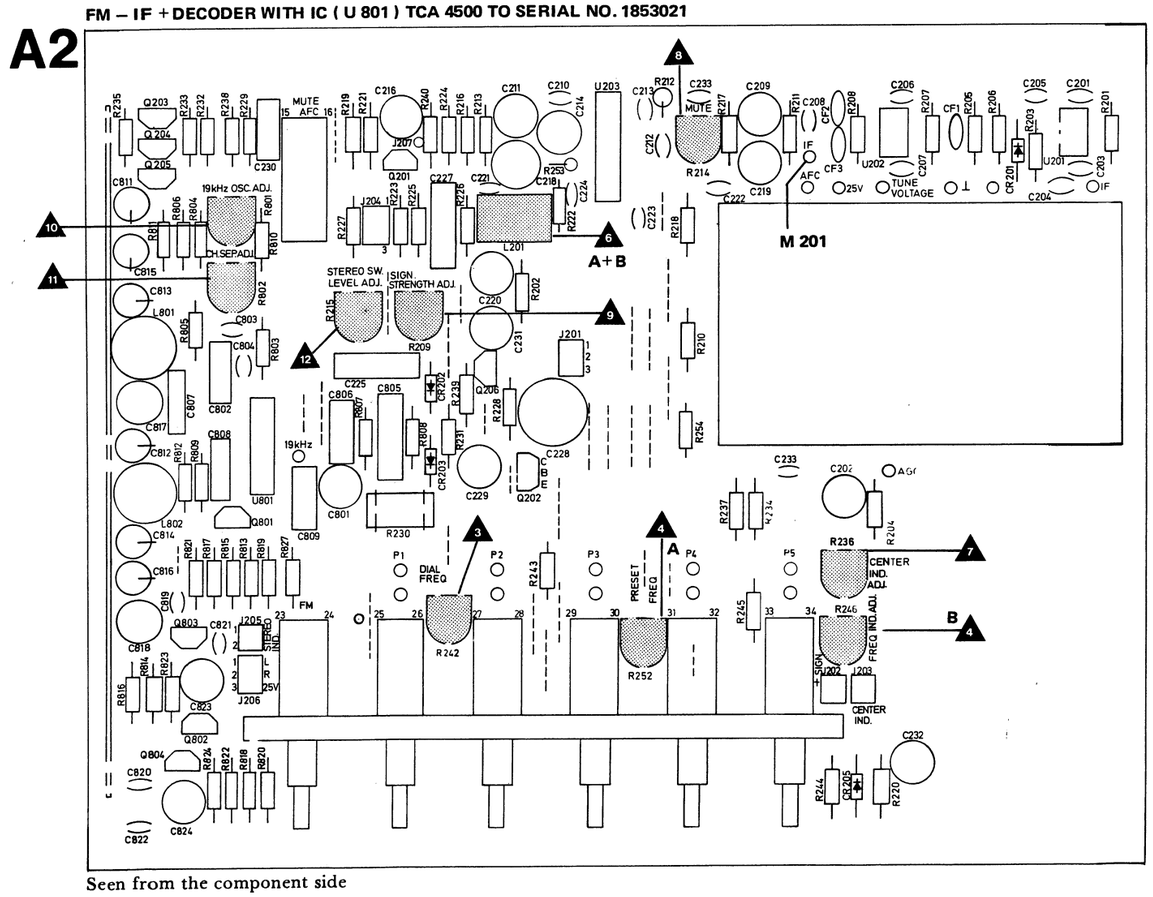
Set the pointer over the mark (*) on the dial as shown in the figure.





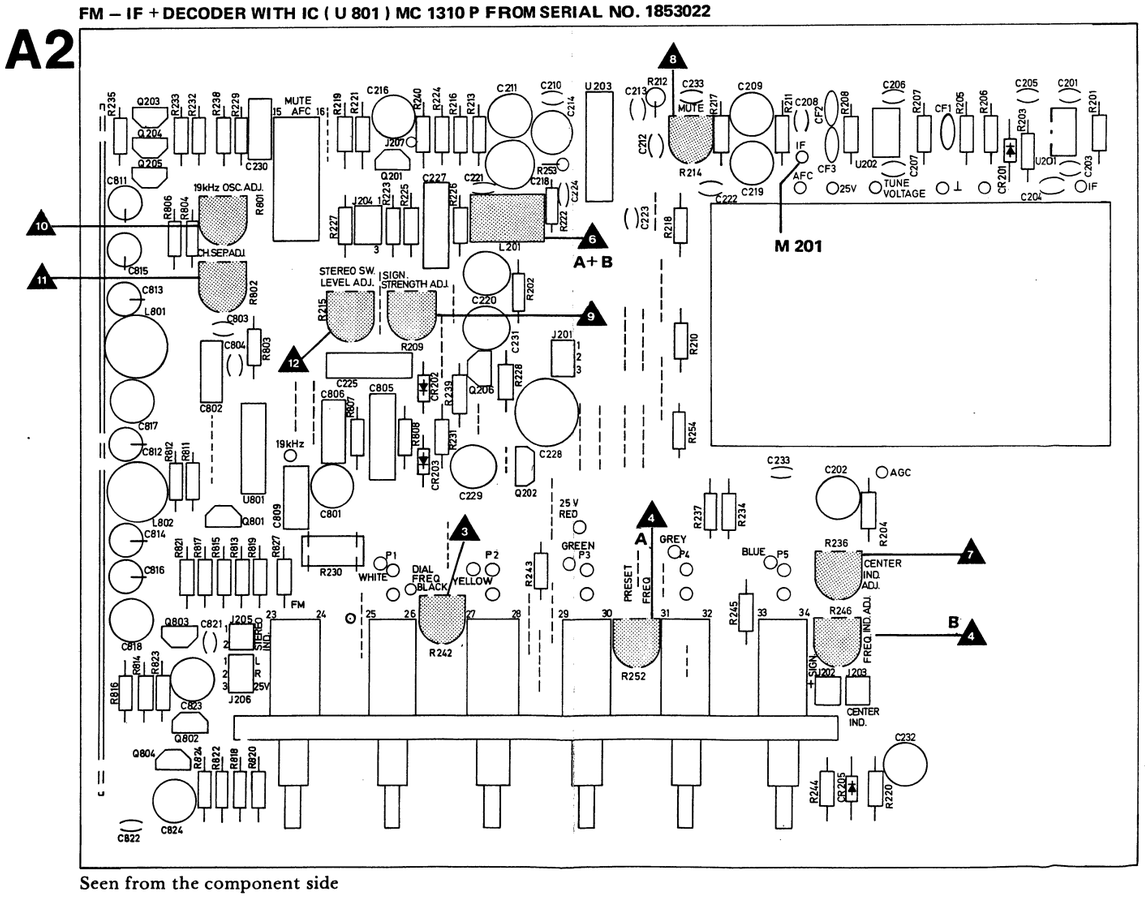


FM – IF + DECODER WITH IC (U 801) TCA 4500 TO SERIAL NO. 1853021



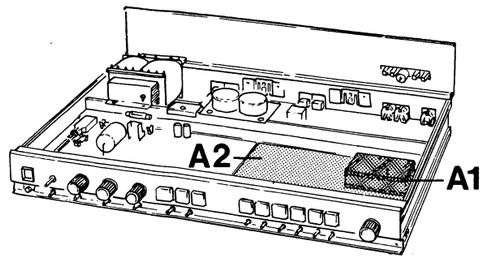
Seen from the component side

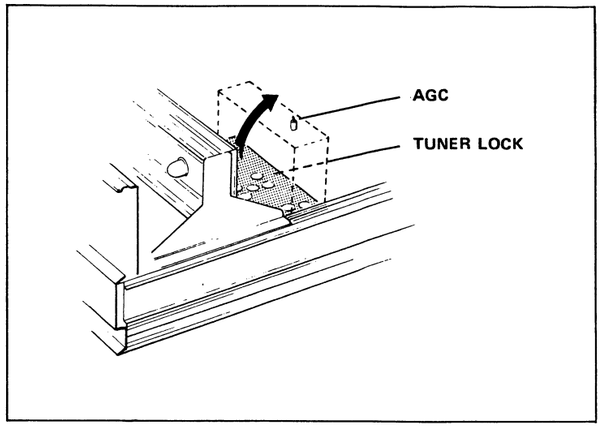
FM – IF + DECODER WITH IC (U 801) MC 1310 P FROM SERIAL NO. 1853022



Seen from the component side

LOCATION



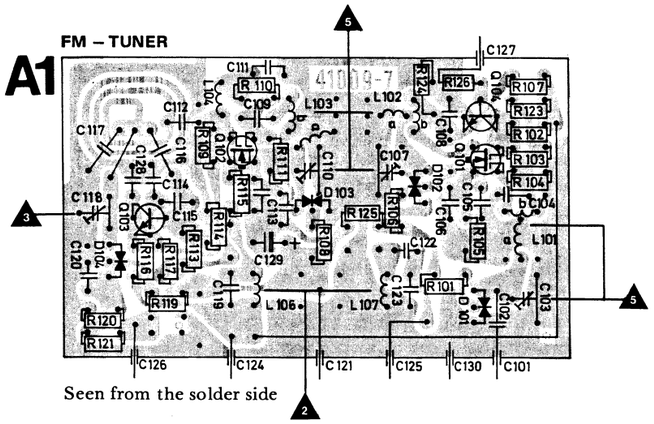


Fault finding in the FM tuner

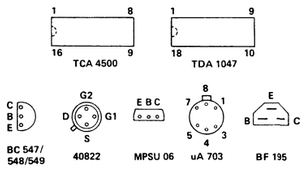
- Remove the tuner lock.
- Tip up the tuner by the front edge.
- Unsolder the AGC lead.

FM – TUNER

A1



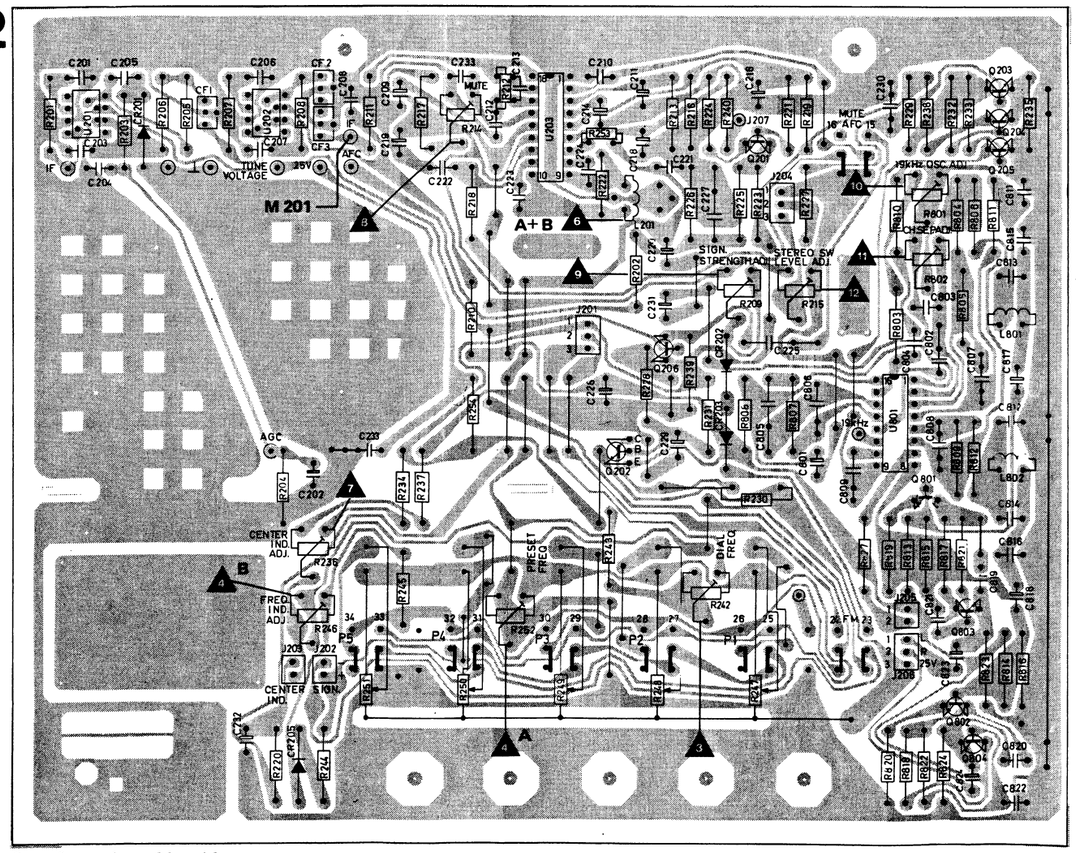
Seen from the solder side



Transistors and IC's are seen from underneath.

FM – IF + DECODER WITH IC (U 801) TCA 4500 TO SERIAL NO. 1853021

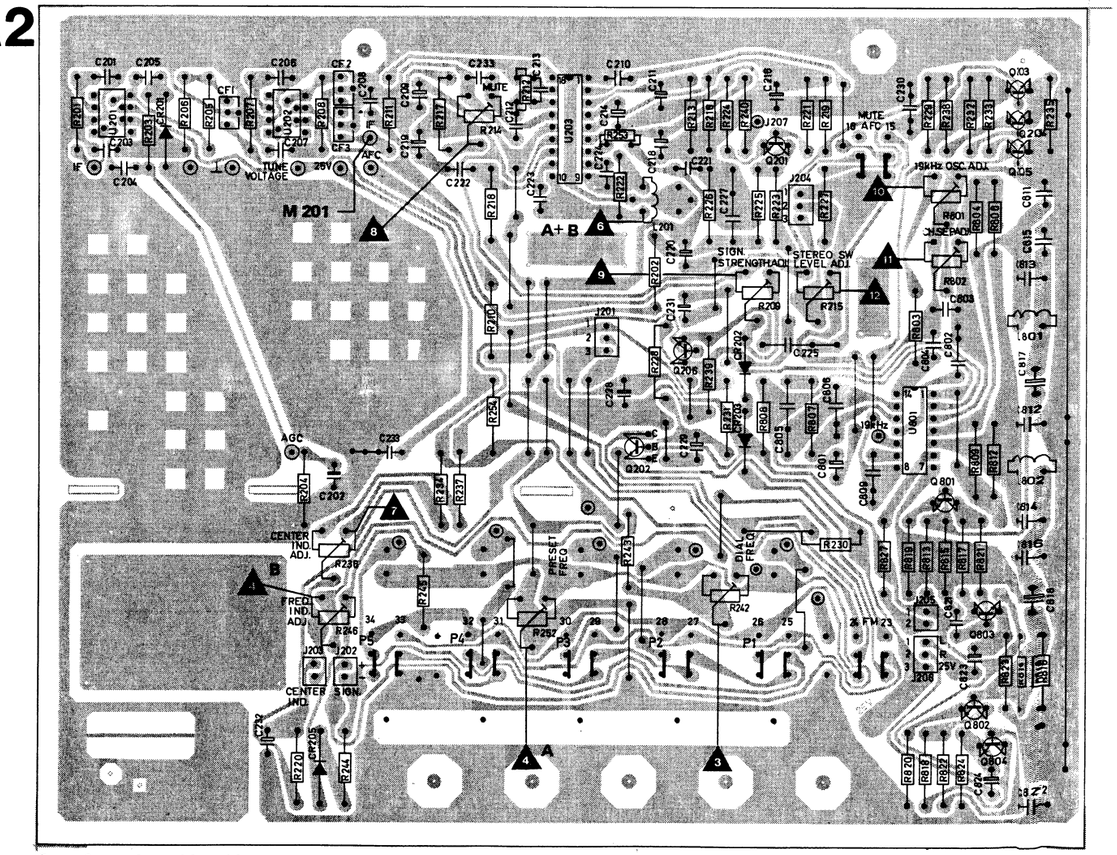
A2



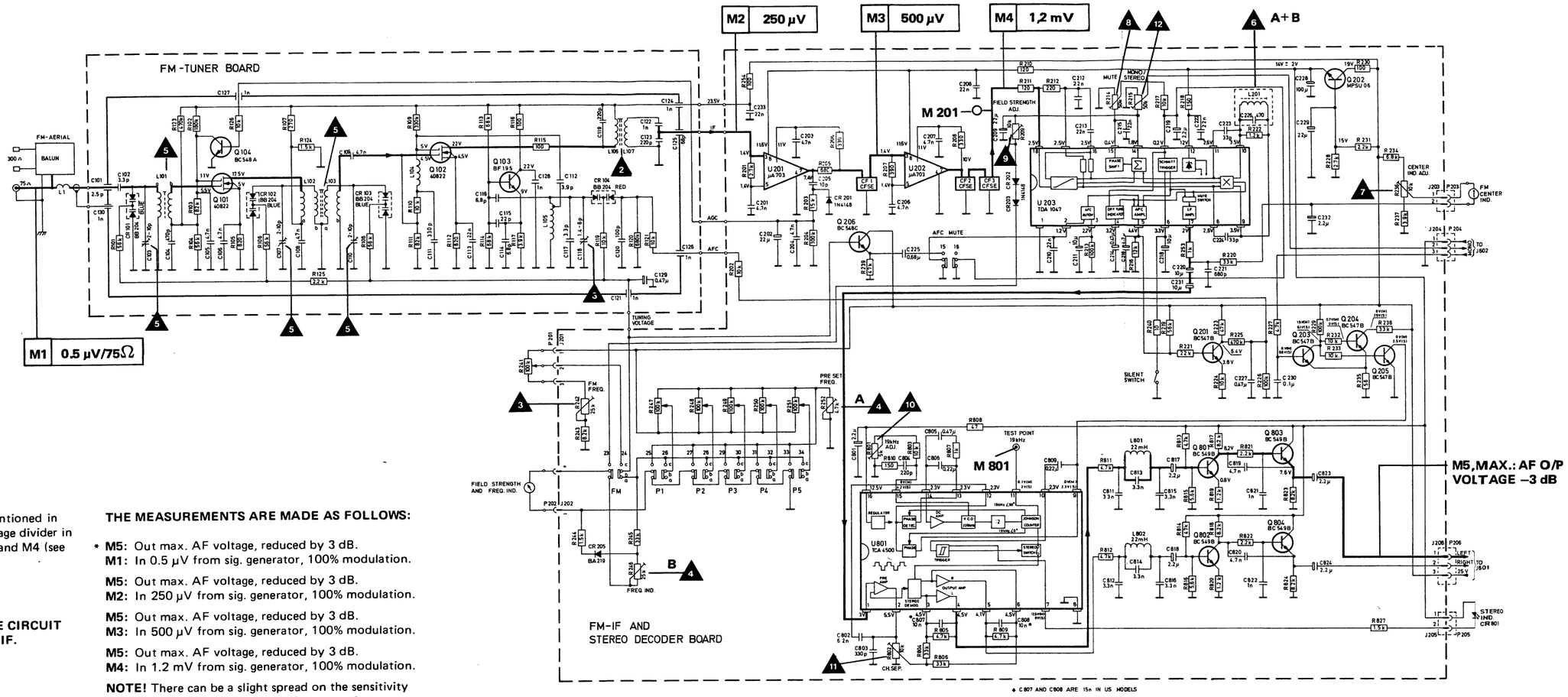
Seen from the solder side

FM – IF + DECODER WITH IC (U 801) MC 1310 P FROM SERIAL NO. 1853022

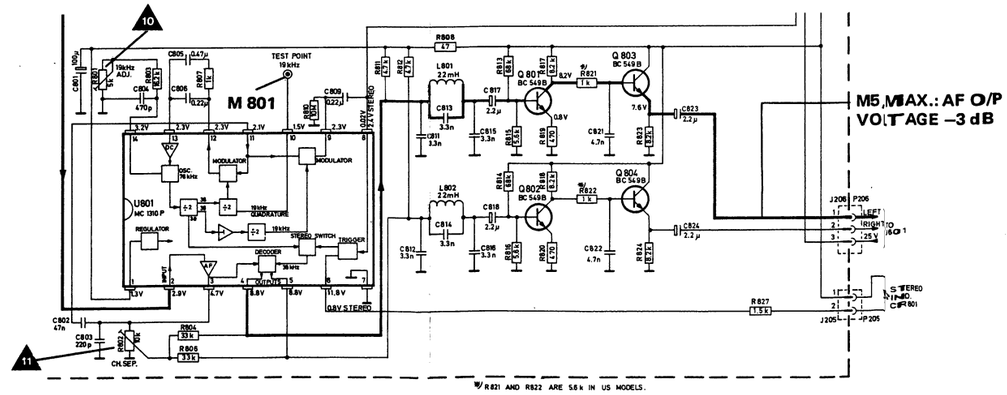
A2



Seen from the solder side

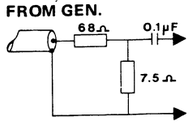


DECODER WITH IC (U 801) TCA 4500 TO SERIAL NO. 1853021



DECODER WITH IC (U 801) MC 1310 P FROM SERIAL NO. 1853022

NOTE! The sensitivity measurements mentioned in the circuit diagram were made with a voltage divider in series with the sig. generator for M2, M3, and M4 (see figure below).



AC Voltage divider (10:1)

NOTE! The leads of the components in the voltage divider must be as short as possible.

THE MEASUREMENTS ARE MADE AS FOLLOWS:

* **M5:** Out max. AF voltage, reduced by 3 dB.
M1: In 0.5 µV from sig. generator, 100% modulation.

M5: Out max. AF voltage, reduced by 3 dB.
M2: In 250 µV from sig. generator, 100% modulation.

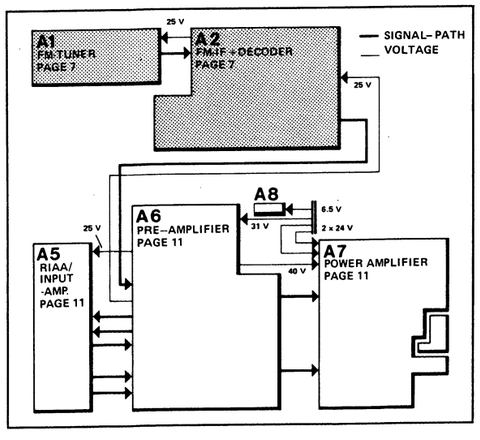
M5: Out max. AF voltage, reduced by 3 dB.
M3: In 500 µV from sig. generator, 100% modulation.

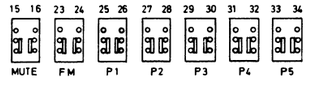
M5: Out max. AF voltage, reduced by 3 dB.
M4: In 1.2 mV from sig. generator, 100% modulation.

NOTE! There can be a slight spread on the sensitivity measurement figures between different receivers.

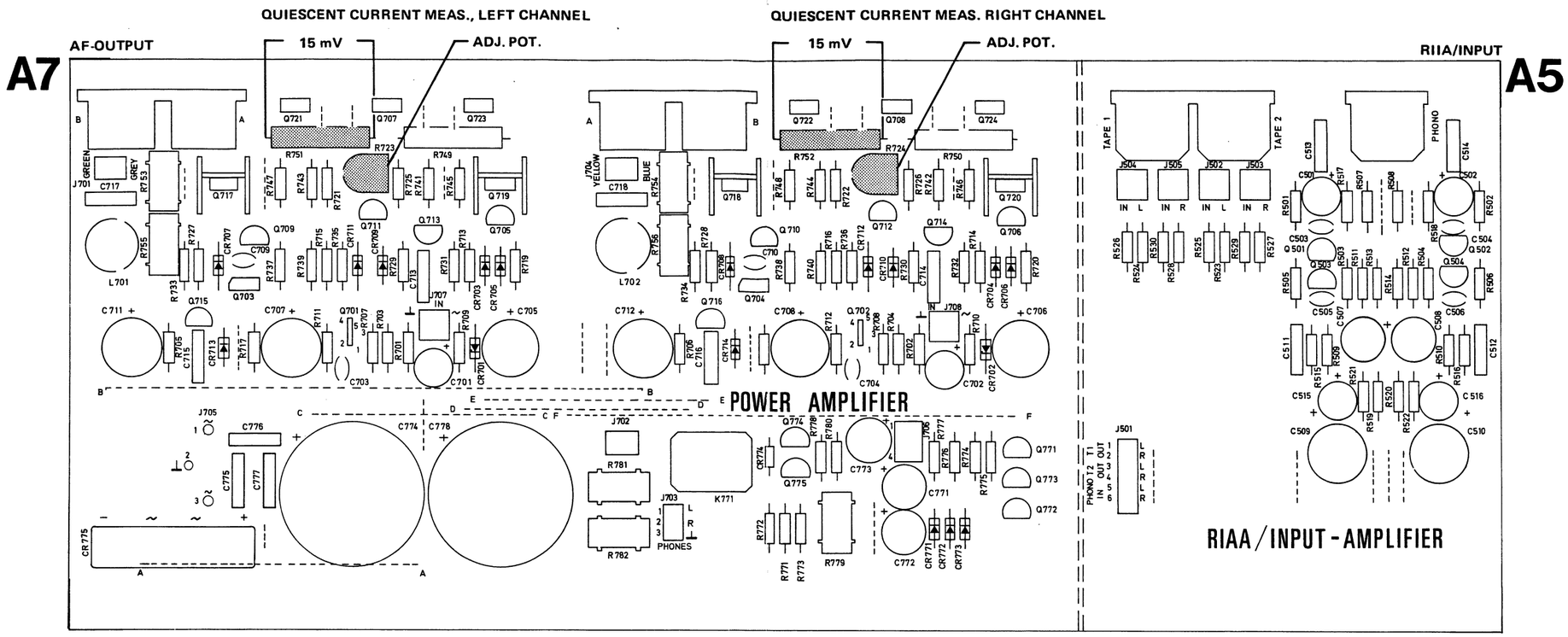
* **NOTE!** When measuring only the sensitivity between M1 and M5 you can use the TAPE OUT (pin 1 or 4) socket as M5 to avoid dismantling the cabinet.

NOTE! When applying a signal from a sig. generator to the circuit, connect the generator positive and negative leads across the IC.

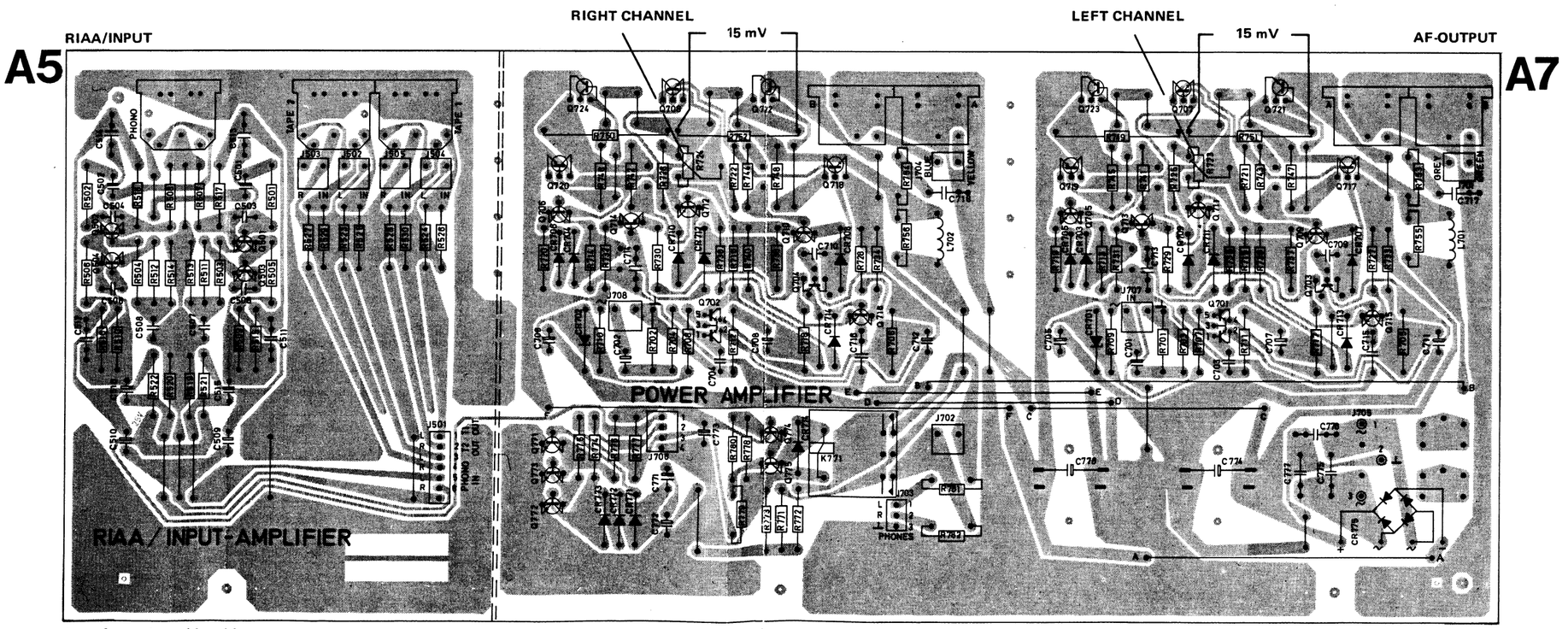




All the switches are shown in the unoperated position.



Seen from the component side



Seen from the solder side

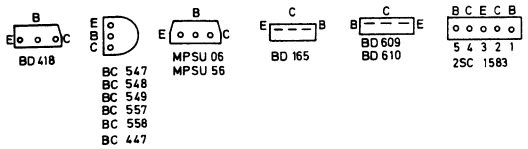
QUIESCENT CURRENT ADJ.

Measure the quiescent current **after 10 mins.** warm up time (with the volume control tuned down) across the emitter resistor R751 (left ch.) and R752 (right ch.).

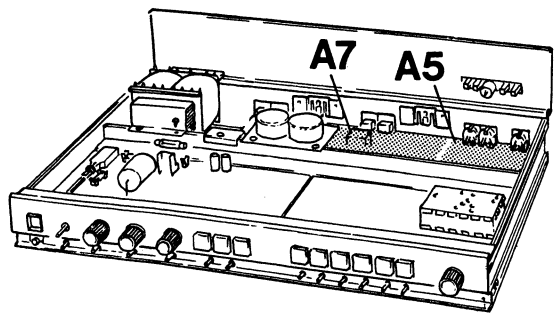
Measure from the component side.

If necessary adjust R723 (left ch.) and R724 (right ch.).

Transistors seen from underneath.

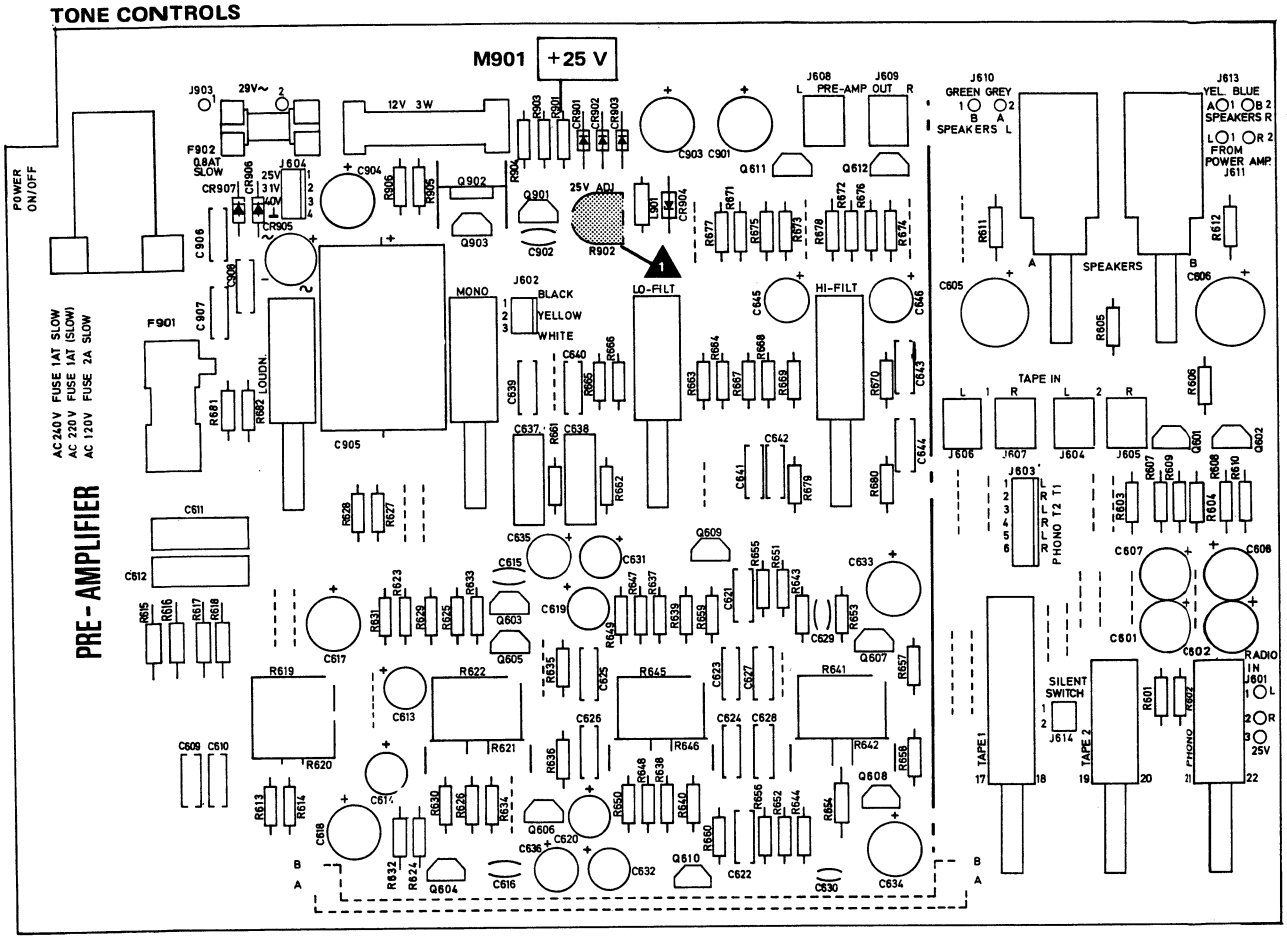


LOCATION



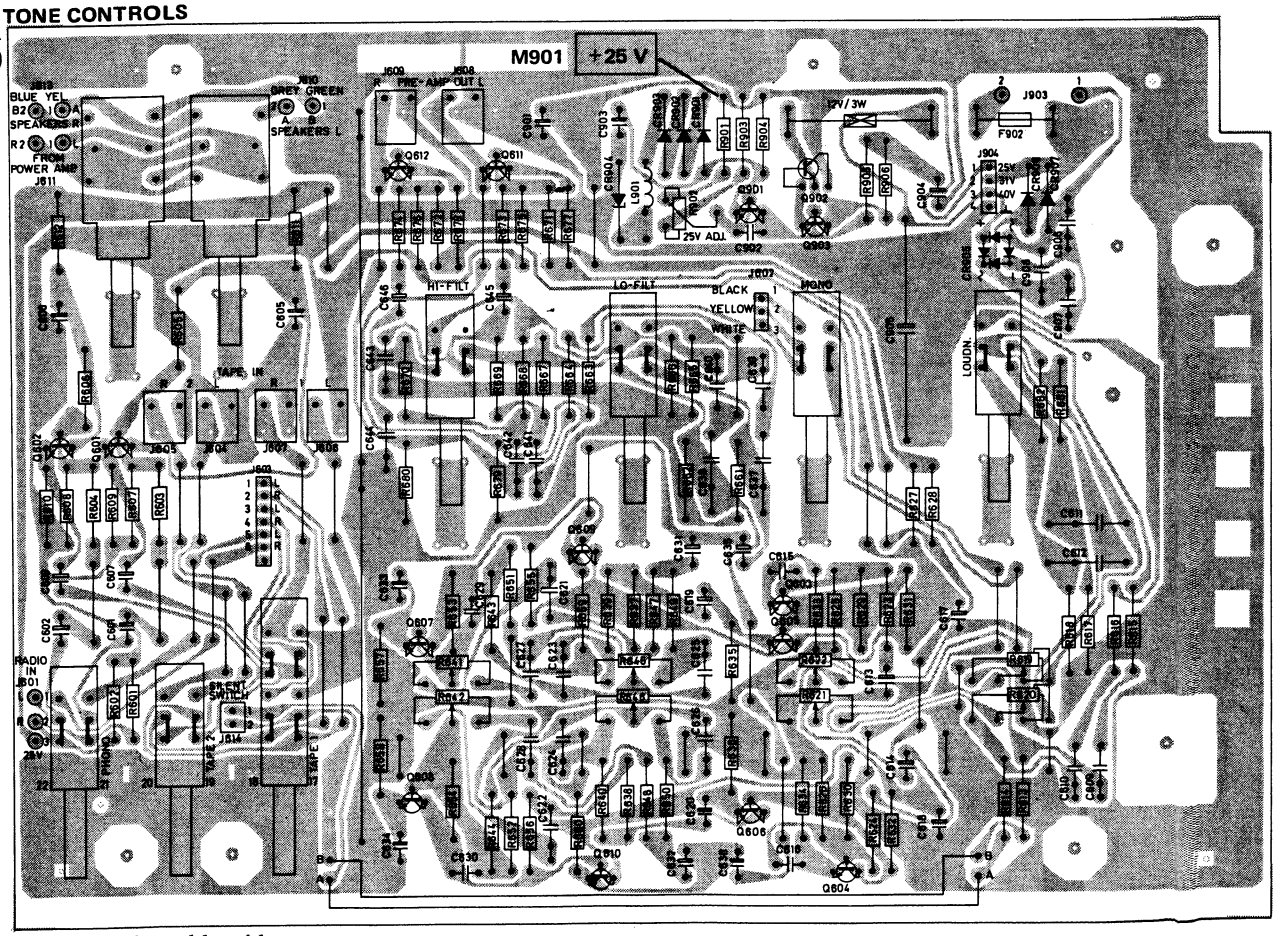
A6

TONE CONTROLS

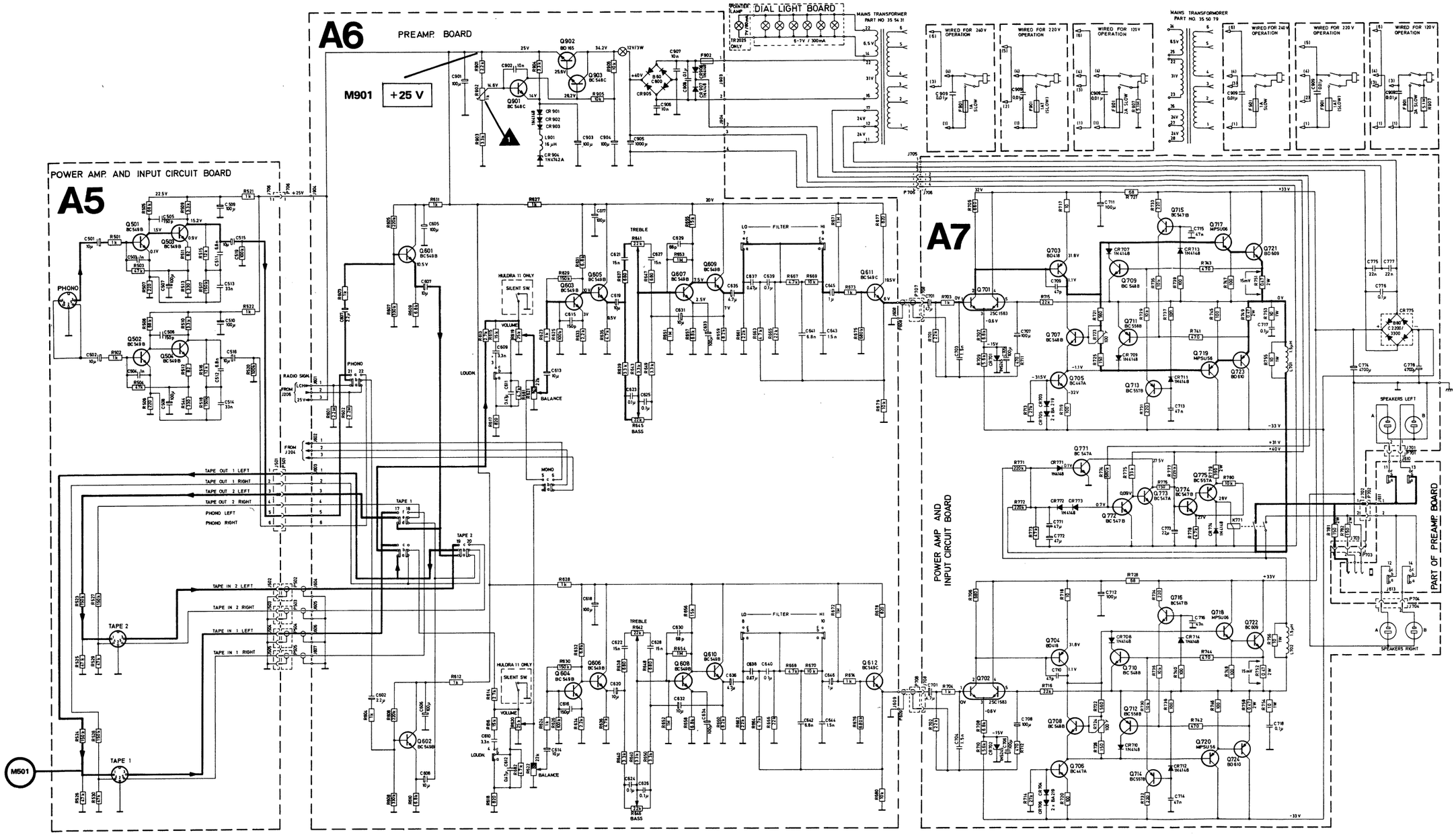


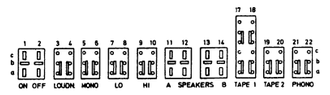
Seen from the component side

TONE CONTROLS



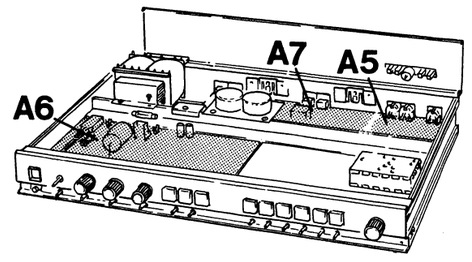
Seen from the solder side

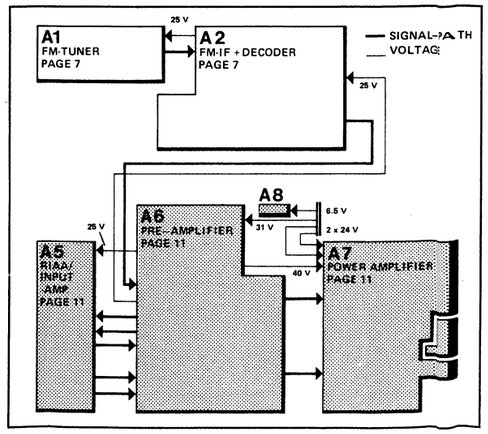




All the switches are shown in the unoperated position.

LOCATION





RAPID HOOK-UP GUIDE

Tape recorder buttons.
Two tape recorders or cassette recorders can be connected to the receiver. Press the button in for the tape recorder you wish to use.

Press the button in when playing back tape or when monitoring (testing) the quality of a recording while it takes place (tape test).

You can copy tape from TAPE 1 to TAPE 2 or vice versa. Press the button in for the tape recorder used for playback.

IMPORTANT! Release the buttons after use otherwise the receiver will be silent.

Record Player Button.
Press in when you play records. Connect the record player to the socket marked PHONO at the back of the receiver.
IMPORTANT! Release the button after use otherwise the receiver will be silent.

FM button
Press in when you tune on the FM scale with the TUNING knob.

FM STEREO lamp.
Comes on when an FM stereo programme with the correct strength is being received.

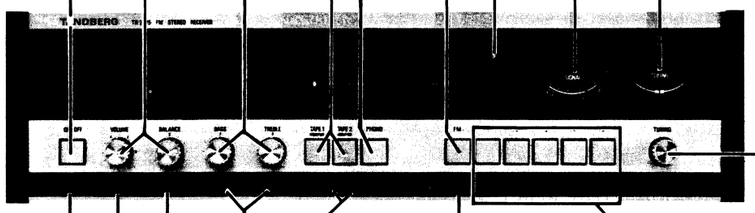
Tone controls.

SIGNAL meter.
When the FM button is *pressed in* the meter will indicate station **signal strength.** Tune with the TUNING knob to obtain maximum deflection on the upper scale. Then use the TUNING meter as described. below.
The lower scale indicates **frequency** and you should use it for pre-tuning FM stations (see below).

VOLUME and BALANCE.
Control the sound level with the VOLUME control. Control the balance of the sound levels in the two channels with the BALANCE control.

TUNING meter.
Tune in a station with the TUNING knob so that the pointer sits in the centre of the scale.

ON-OFF switch .
ON: Press the button in.
OFF: Release with another push.



Tuning knob for FM

Headphones jack
¼" (6 mm) jack. Lowest impedance: 4 ohms.

Loudness/frequency correction
Depress to boost low and high frequencies at low volume.

FM stereo/mono
Button out: Stereo reproduction.
Button in: Mono reproduction. Press the button in if the stereo programme is disturbed by noise or distortion.

Noise filters
Press the LO-FILT button in if you are troubled by noise in the low frequency region, e.g. rumble from a record player. The filter will also reduce acoustic feedback from speakers to a record player.
Attenuation: – 12 dB per octave from 70 Hz.

Press the HI-FILT button in if you are troubled by noise in the high frequency region, e.g. scratch noise from an old record or hiss from a tape recording.
Attenuation: – 12 dB per octave from 8 kHz.

Speaker selector
Both buttons out: None of the speakers connected (used e.g. when listening to headphones).

A button in: Sound to speakers connected to sockets marked A at the back of the receiver.

B button in: Sound to speakers connected to sockets marked B at the back of the receiver.

Both buttons in: Sound to all speakers.

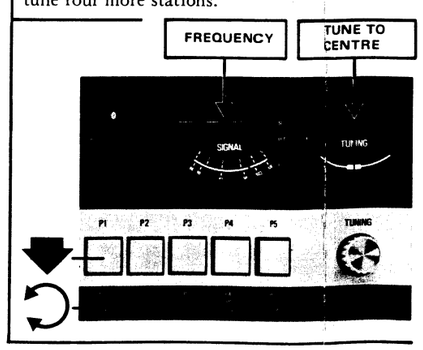
FM noise suppressor and tuning lock.
This button is only active on FM. When the button is pressed:
1. The receiver automatically cuts out "tuning noise" and weak stations and is only open to receive strong stations. This provides pleasant noise-free tuning.
2. When you have tuned in an FM station, an electronic circuit in the receiver will operate after about 1 second to keep the station in tune all the time.

Controls for pre-tuning 5 FM stations
PROCEDURE:

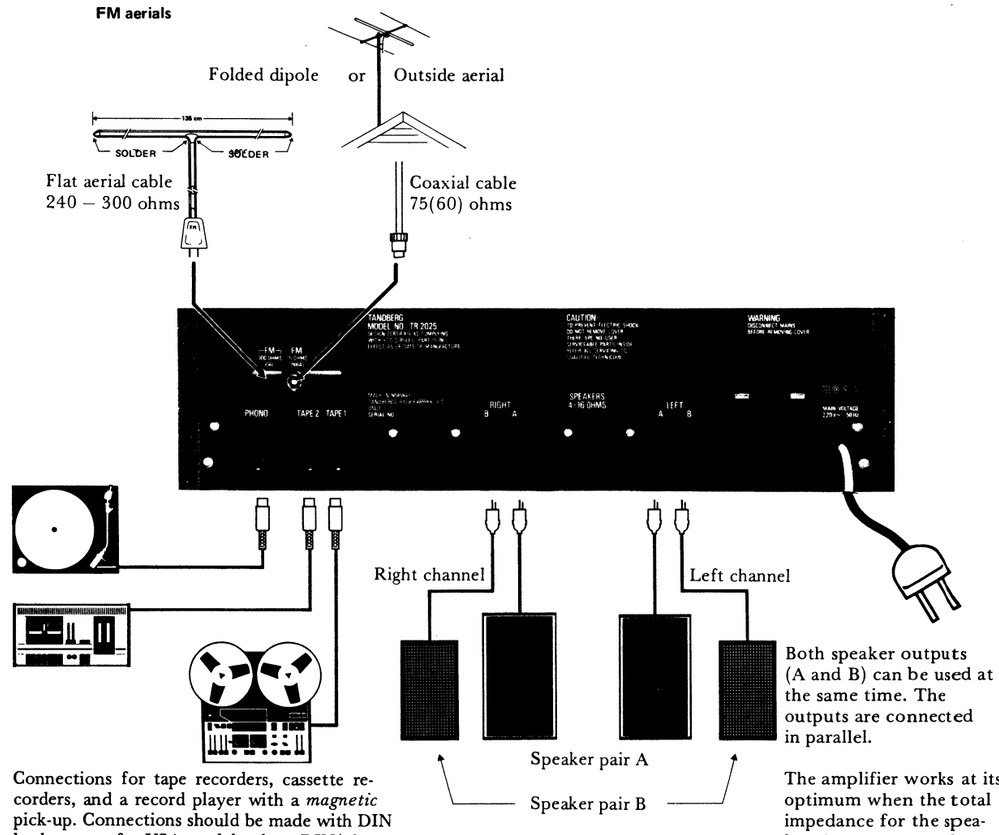
Press in the square button P1. Turn the round black knob P1 to tune in the required station. Fine tune the knob until the pointer on the TUNING meter sits in the centre. You can read the frequency of the station on the lower scale of the SIGNAL meter.

Later, every time you press in P1 button the station will come on automatically.

The other buttons P2 to P5 can be used with knobs P2 to P5 to pre-tune four more stations.



FM aerials



Both speaker outputs (A and B) can be used at the same time. The outputs are connected in parallel.

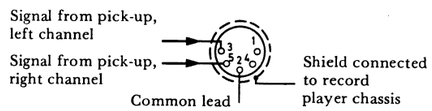
Connections for tape recorders, cassette recorders, and a record player with a *magnetic* pick-up. Connections should be made with DIN leads except for USA models where DIN/phono adapters are supplied.

The amplifier works at its optimum when the total impedance for the speakers in use on one channel is between 4 and 8 ohms.

PLUGS FOR RECORD PLAYER, TAPE RECORDERS HEADPHONES.

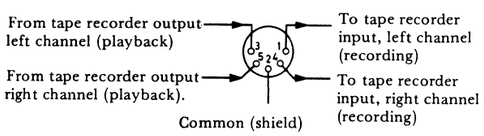
The plugs are seen from the wiring side. 

Record player (PHONO) DIN plug

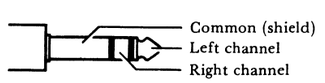


The common lead and the shield must not be wired together.

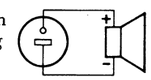
Tape recorders (TAPE 1 and TAPE 2) DIN plug



Headphones (PHONES) jack plug



Loudspeaker DIN plug

The flat pin on the plug is "earth". 

Useful data

Inputs:

	Input sensitivity for 25W in 8 Ω at 1 kHz	Input impedance
PHONO	2.3 mV	47 kΩ
TAPE 1	170 mV	15 to 27 kΩ
TAPE 2	170 mV	15 to 27 kΩ

Outputs:

TAPE sockets, unloaded: 250 mV (output imp. = 33 kΩ)
PHONES, unloaded: 16 V max. (output imp. = 150 Ω)
AC Power requirement: 120/220/240 V, 50/60 Hz
AC Power consumption: 190 W (full power)
45 W (no signal)

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